

## Claims:

1. A layer, wherein the layer is obtained by thermal treatment from an aqueous dispersion applied to a substrate, the dispersion containing silicon/titanium mixed oxide powder prepared by flame hydrolysis.  
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2. A layer as claimed in claim 1, wherein the thickness of the layer is between 100 nm and 1 mm, preferably between 1  $\mu\text{m}$  and 50  $\mu\text{m}$ , particularly preferably between 5  $\mu\text{m}$  and 15  $\mu\text{m}$ .
- 10 3. A layer as claimed in claim 1 or 2, wherein the BET surface area of the powder is between 5 and 500  $\text{m}^2/\text{g}$ .
4. A layer as claimed in claims 1 to 3, wherein the titanium dioxide content of the powder is between 0.1 and 99.9 wt.%, particularly preferably between 2 and 15 20 wt.%.
- 15 20 5. A layer as claimed in claims 1 to 4, wherein it contains a mixture of powders with high BET surface areas of at least 170  $\text{m}^2/\text{g}$  and those with low BET surface areas of at most 70  $\text{m}^2/\text{g}$ , preferably with high BET surface areas of at least 130  $\text{m}^2/\text{g}$  and those with low BET surface areas of at most 90  $\text{m}^2/\text{g}$ , wherein the ratio by weight of powder with lower BET surface areas to powders with higher BET surface areas is between 40:60 and 99.5:0.5.
- 25 6. A process for preparing the layer as claimed in claims 1 to 5, wherein a dispersion is applied to a substrate, the dispersion containing silicon/titanium mixed oxide powder, and this is subsequently sintered by thermal treatment.
- 30 7. A dispersion prepared by using silicon/titanium mixed oxide powder prepared by using flame hydrolysis, wherein the proportion of powder is between 0.1 and 60 wt.%.

8. Use of the layer as claimed in claims 1 to 4 for use in composite materials with materials with very low coefficients of expansion (ultra-low expansion, ULE, materials), for photocatalytic applications, as coatings for self-cleaning mirrors (superhydrophilic constituents), for optical items such as lenses, as seals for gases and liquids and as mechanical protective layers.

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